	EPA Level of Effort Paper
Overall Goal	Establish relationships between sediment characteristics and toxicity to benthic organisms
Sediment Chemistry	Listed in Table 1, includes Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Zinc, Aluminum, Antimony, Barium, Beryllium, Cobalt, Iron, Magnesium, Manganese, Mercury, Molybdenum, Selenium, Silver, Thallium, Tin, Uranium, Vanadium, Calcium, Potassium, Sodium, Methyl Mercury, DDE/DDD/DDT, Methoxychlor, Dioxins/Furans, PBDEs. LOE also says "Any COI refinement must be conducted in accordance with USEPA guidance."
Sediment Characterization	Grain size, AVS, SEM, TOC, pH, eH, ORP
Slag Characterization	Qualitative estimate of occurrence of slag (enrichment of zinc, copper, antimony, iron and calcium). Quantiative measurement of slag using individual point counts of sediment grains and/or XRF or x-ray absorptions spectrometry
Number of Samples	Experience at other sites indicates that 100 to 130 samples may be needed to provide sufficient data to support derivation of concentration-response relationships -- 25 to 50 samples per batch
Sample locations	4 bins, including external reference sites, site samples with low levels of metals, site samples with moderate levels of metals, site samples with high levels of metals
Toxicity Test Organisms	10 day *C dilutus* 28 day *H azteca* 53 day *C dilutus* (on min. of 12 samples) 42 day *H azteca* (on min. of 12 samples) 28 day *L siliquoidea* (on min. of 12 samples)
Pore water Chemistry	Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Zinc, DDE/DDD/DDT, TOC, DOC, pH, eH, ORP, ammonia, dissolved oxygen, free sulfide, hardness, alkalinity, conductivity, major cations, and major anions
Bioaccumulation	10 day *C dilutus* (run extra tests to obtain tissue) 28 day L variegatus (i.e., 15 to 20 samples)
Collection Methods	Press sieve sediments to <2 mm Test centrifugation, peepers, other methods to collect pore water in a pilot program to determine best pore water collection method

Teck's Draft QAPP
Concentration-response relationships, measures of bioavailability
Aluminum, Arsenic, Cadmium, Chromium, Copper, Iron, Lead, Manganese, Nickel, Vanadium, Zinc
AVS, SEM, TOC, pH, grain size
not discussed
50 samples, with bioassays run on 30 for Round 1. Number in potential Round 2 not specified.
Along a gradient based on higher Zn/V ratios and MPECQ values, in deep and shallow water, and in Canada for external reference sites
10 day *C dilutus* 10 day *H azteca* 50 - 65 day *C dilutus* (on 12 samples) 42 day *H azteca* (on 12 samples)
Arsenic, cadmium, chromium, copper, lead, manganese, nickel, zinc, TOC, DOC, pH, calcium, magnesium, sodium, chloride, sulfate, potassium, hardness as CaCO3
not discussed
Van Veen grab, no sieving Ceramic airstone inserted in special port in the Van Veen to collect pore water